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ABSTRACT

The report of the Interagency Language Roundtable's invitational symposium on language aptitude testing consists of a description of the project and appendixes which include the following: (1) the symposium program and abstracts of papers; (2) a list of participants; and (3) summaries of the discussions of three working groups (on applications, research, and instrumentation respectively). The symposium was developed in response to intense interest in testing for foreign language learning aptitude among government agencies involved in foreign language training. It included individual and panel presentations by representatives of the National Cryptologic School, Federal Bureau of Investigation, Public Service Commission of Canada, Defense Language Institute, Central Intelligence Agency, National Security Agency, Army Research Institute, Foreign Service Institute, U.S. Air Force Academy and academic institutions. The presentations included these topics: aptitude tests currently in use in government agencies; cognitive abilities and foreign language aptitude; the uses and limitations of various tests in public agencies; predictors of success in intensive language learning; a new language aptitude test using an artificial language; learning styles, strategies, and aptitude; cognitive models of students' language structure based on intelligent computer-assisted instruction; the relationship between cognitive development and language proficiency; brain hemisphericity, language aptitude testing, and prediction of success in foreign language learning; and aspects of attitude, motivation, and personality in language learning. (MSE)

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Interagency Language Roundtable

Invitational Symposium on

Language Aptitude Testing

September 14-16, 1988

Westpark Hotel/Foreign Service Institute

Rosslyn, Virginia

Final Report for:

Grant No. 88-D-750000-710

Central Intelligence Agency

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Accurate measuring of aptitude for learning modern foreign languages is of definite concern to many government agencies, including the Central Intelligence Agency (CIA), the National Security Agency (NSA), the Foreign Service Institute (FSI), the Federal Bureau of Investigation (FBI) and the Defense Language Institute (DLI). In all these agencies, language aptitude testing plays an important role, most commonly in selection for and/or placement in language training programs. Thus, it is not surprising that in the spring of 1987, the Interagency Language Roundtable (ILR), which is composed of representatives of all the government agencies involved or interested in foreign language training, discussed the need to pursue a major initiative in the testing of foreign language learning aptitude. As a result, a special section of the one day conference for government linguists held prior to the 1987 Georgetown University Roundtable on Languages and Linguistics was devoted to language aptitude testing. Given the amount of interest demonstrated in the subject by those in attendance, the ILR Testing Committee subsequently voted to propose to the ILR Management Committee that a conference on language aptitude research and testing be held as soon as feasible. The Management Committee endorsed this concept and presented it to the full ILR body in May of 1987.

In September, 1988, the ILR Invitational Symposium on Language Aptitude Testing became a reality. The two and one half day meeting was held on September 14-16, 1988, at the Foreign Service Institute Language School in Rosslyn, Virginia.[1] Funding for the symposium was provided by the following government agencies: the Central Intelligence Agency (CIA), the Defense Language Institute (DLI), the Federal Bureau of Investigation

[1] Due to the unavailability of a large conference room at the FSI on September 14, meetings on that day were held at the nearby Westpark Hotel.

(FBI), the National Security Agency (NSA) and the U.S. Department of Education.

During the planning of the conference, the Center for Applied Linguistics (CAL) was pleased to serve as "secretariat" for this important event under contract with the CIA. The organizational committee for the symposium consisted of Thomas Parry (CIA), Madeline Ehrman (FSI), James Child (Department of Defense), Charles Stansfield (CAL) and Dorry Kenyon (CAL). This committee met monthly from January to May, 1988. Activities involved in organizing the conference included choosing the dates and location, designing the structure of the symposium, identifying potential speakers from the academic community to prepare and present commissioned papers on important relevant topics, and identifying potential presenters from within the government agencies to present on current research within the government.

During the spring of 1988, the academic presenters named by the committee were personally contacted by Dr. Stansfield. Letters to potential government presenters named by the committee and letters soliciting other government presentations were also sent out by CAL at the same time. By the June ILR bimonthly meeting, the symposium program was completed and presented to the whole body for discussion. The final printed program is presented in Appendix A.

Three goals guided the planning of the symposium. The first goal was to ensure that the meeting would infuse the ILR discussion of language aptitude testing with the latest research on relevant topics. Another goal was to foster cooperation among the agencies to the fullest extent possible. Lastly, though perhaps most importantly, the symposium was to be work-oriented. One of the major conference goals was the production of a final written set of recommendations for future work in the area of Language Aptitude Testing. The

following discussion shows how these goals were met.

In order to bring the latest research from the academic world into the government's discussion of language aptitude testing, three experts in the field were commissioned to write papers for presentation at the conference. Unfortunately, a fourth presenter, Marjorie Wesche of the University of Ottawa, was unable to participate. The three commissioned speakers and their topics were:

1. John Carroll (University of North Carolina, emeritus) on "*Cognitive Abilities and Foreign Language Aptitude: Then and Now,*"
2. Rebecca Oxford (Annenberg/CPC Project) on "*Styles, Strategies and Aptitude: Important Connections for Language Learners,*" and
3. Robert C. Gardner (University of Western Ontario, Canada) on "*Attitude, Motivation and Personality as Predictors of Success in Foreign Language Learning.*"

Each of the above presentations was scheduled to last approximately 45 minutes, to be followed by an additional 45 minutes for questions and discussions. Each commissioned presenter received an honorarium plus reimbursement of expenses incurred in attending the symposium.

In lieu of Marjorie Wesche's attendance, E. Franklin Jacobus of Davidson College was accepted as a fourth presenter from outside the government. His paper was entitled "*The Relationship between Cognitive Development and Foreign Language Proficiency.*"

In order to serve the needs of the sponsoring agencies and to encourage cooperation among them, there were four special facets in the structure of the symposium. First, the symposium opened with a panel presentation of descriptions of the five foreign language

aptitude tests currently in use at the various agencies. Second, on a second panel on the first day of the conference, representatives from the National Cryptologic School, FSI, CIA, DLI, and FBI discussed the role of language aptitude testing in those agencies--what is currently being done and what problems and needs exist. This panel was joined by two representatives from the Public Service Commission of Canada, which has a very large and well-known language training program that makes extensive use of language aptitude tests. Third, there were six presentations by government employees reporting on research currently being undertaken in the government. These presentations involved ten people and represented the following agencies: DLI, CIA, NSA, Army Research Institute (ARI), FSI and the U.S. Air Force Academy. (For the names, titles and abstracts of all the presentations see the symposium program, Appendix A.) These presentations were planned to be approximately 30 minutes long, with at least 15 minutes of discussion following. Finally, the working groups described below allowed participants from various agencies to work closely together. To ensure that the conference would be work-oriented, three facets were designed into the program. First, the number of invited participants was limited to 65. During the summer, invitations were sent out from CAL to the various government agencies. Each agency was limited to a certain number of participants. In addition, an invitation to send one representative each was extended to both the Educational Testing Service (ETS) and the American Council on the Teaching of Foreign Languages (ACTFL). The actual number of participants was 58. (Appendix B contains a list of all participants and their addresses. This list was sent to all participants following the symposium to encourage further future cooperation among the agencies.)

Second, copies of the presentation papers would be made available to all conference participants by the time of the conference. This goal was achieved with the exception of one government presentation. Presenters sent their papers to CAL. The four received by August 15 were reviewed by Dorry Kenyon and then revised by the author(s). Before the symposium the papers received were duplicated and then distributed to all participants at the symposium. Appendix C contains these papers in alphabetical order by first author.

Third, a special feature of the conference was time allotted for participants to divide into three smaller working groups. Each group had a facilitator and a specific focus: Language Aptitude Testing--Instrument Design, Research in Language Aptitude Testing, and Applications of Language Aptitude Testing. These working groups met initially at the end of the first day of the symposium, and then for two hours on the last morning. Contrary to the schedule presented in the printed program (Appendix A), after the Friday morning coffee break all participants met together one last time. At this final meeting the facilitator from each group presented to the whole body a summary of the group's discussion. (The written summary from each of these groups is in Appendix D.) It was out of these working groups that the major goal of the symposium was met, namely, to work towards writing long-range research agenda towards the development of more appropriate language aptitude measures than are currently available or in use. After the three working groups presented their summaries on Friday, it was decided by all present that a position paper be written and presented to the ILR testing committee for discussion, and then to the main body of the ILR itself.

In addition to the writing of a position paper, another important outcome of the symposium will be the published collection of the papers presented. This collection will be

printed in 1989 by Prentice Hall as part of the Language in Education series of the ERIC/Clearinghouse on Languages and Linguistics.

To ensure that the academic community is informed of the event, announcements about the symposium have been prepared and sent to the Modern Language Journal, System, and Language Testing Update. In addition, Charles Stansfield, Thomas Parry, Madeline Ehrman and Rebecca Oxford will be presenting a report on the symposium entitled "Testing Foreign Language Aptitude in the United States Government" on November 19, 1988, at the annual ACTFL conference. The above, along with the set of recommendations to the ILR, will make sure that the symposium has an impact not only in the government, but outside the government as well.

During the symposium, CAL staff (Charles Stansfield, Dorry Kenyon, John Karl, Laurel Winston and Stephanie Kasuboski) made sure everything ran smoothly and that all the proceedings were correctly tape-recorded. Cheryl Francis of the FSI served as the on-site liaison.

APPENDIX A

Program for the

Interagency Language Roundtable

Invitation Symposium on

Language Aptitude Testing

Interagency Language Roundtable

Invitational Symposium on

Language Aptitude Testing

SYMPOSIUM PROGRAM

ABSTRACTS OF PAPERS

Westpark Hotel/Foreign Service Institute

Rosslyn, Virginia

September 14-16, 1988

Organizational Committee

James Child
Department of Defense

Madeline Ehrman
Foreign Service Institute

Thomas Parry
Central Intelligence Agency

Charles Stansfield
Center for Applied Linguistics

Dorry Kenyon
Center for Applied Linguistics

with assistance from:

John Karl, Stephanie Kasuboski and Laurel Winston
Center for Applied Linguistics

Cheryl Francis
Foreign Service Institute

Funding for this Symposium has been Provided by:

Central Intelligence Agency

Defense Language Institute

Federal Bureau of Investigation

Foreign Service Institute

National Security Administration

U.S. Department of Education

PROGRAM

Wednesday Morning, September 14
Dogwood Room, Westpark Hotel

8:30 - 8.40 **Welcome**
Charles Stansfield *(Conference Moderator)*

8:40 - 9:20 **Panel Presentation**

Topic: *Descriptions of Aptitude Tests Currently in Use*

MLAT	Thea Bruhn
ALAT	James Child
DLAB	John Clark
VORD	James Child
PLAB	Charles Stansfield

9:20 - 10:00 **Academic Presentation**

John Carroll: *Cognitive Abilities and Foreign Language Aptitude: Then and Now*

10:00 - 10:45 **Discussion of Dr. Carroll's presentation**

10:45 - 11:00 **Coffee Break**

11:00 - 12:00 **Panel Presentation**

Topic: *The Uses/limitations of Aptitude Testing in Various Agencies*

FSI	Thea Bruhn
FBI	Marijke Walker
CIA	Thomas Parry
DLI	John Lett
NCS	James Child
PSC/Canada	Angie Todesco and Thérèse Castonguay

12:00 - 1:15 **Lunch Break**

Wednesday Afternoon, September 14
Dogwood Room, Westpark Hotel

1:15 - 2:00 **Continuation of 11:00 panel discussion.**

2:00 - 3:45 **Presentations**

John Lett:
Frank E. O'Mara — *Predictors of Success in an Intensive Language Learning Context: An Explanatory Model of Classroom Language Learning at the Defense Language Institute*

Discussion

Thomas Parry:
James Child — *Preliminary Investigation of the Relationship between VORD, MLAT and Language Proficiency*

Discussion

3:45 - 3:55 **Orientation to Working Group Objectives**
Charles Stansfield

3:55 - 4:15 **Coffee Break**
Walk to the Foreign Service Institute

4:15 - 5:00 **Initial Working Group Meetings**
At the Foreign Service Institute

Facilitator	Room	Working Group Title
Rebecca Oxford	212	**Applications** of Language Aptitude Testing
Thomas Parry	213	**Research** in Language Aptitude Testing
Charles Stansfield	214	Language Aptitude Testing--**Instrument Design**

5:00 - 6:00 **Social Hour**
Meet at the Vantage Point Lounge, top of the Westpark Hotel

Thursday Morning, September 15
Room 101, Foreign Service Institute

8:30 - 9:15 **Academic Presentation**

Rebecca Oxford: *Styles, Strategies and Aptitude: Important Connections for Language Learners*

9:15 - 10:00 **Discussion of Dr. Oxford's presentation**

10:00 - 10:15 **Coffee Break**

10:15 - 12:15 **Presentations**

Joseph Psotka:
Merryanna Swartz
Melissa Holland
Seymour Hanfling
Cognitive Models of Students' Language Structure: The View from Intelligent Computer Assisted Instruction

Discussion

Frank Jacobus: *The Relationship between Cognitive Development and Foreign Language Proficiency*

Discussion

Betty Lou Leaver: *Brain Hemisphericity, Language Aptitude Testing and Prediction of Success in Foreign Language Learning*

Discussion

12:15 - 1:30 **Lunch Break**

Thursday Afternoon, September 15
Room 101, Foreign Service Institute

1:30 - 2:15 **Academic Presentation**

Robert Gardner: *Attitude, Motivation and Personality as Predictors of Success in Foreign Language Learning*

2:15 - 3:00 **Discussion of Dr. Gardner's presentation**

3:00 - 3:15 **Coffee Break**

3:15 - 5:00 **Presentations**

Madeline Ehrman: *The Role of Personality Type in Adult Language Learning: An Ongoing Investigation*

Discussion

Michael Bush: *The Personality and Attitudinal Dimensions of Language Aptitude*

Discussion

5:00 - 6:00 **Social Hour**
Meet at the Vantage Point Lounge, at the top of the Westpark Hotel

Friday Morning, September 16
Foreign Service Institute

8:30 - 10:00 **Working Group Meetings**

Facilitator	Room	Working Group Title
Rebecca Oxford	211	**Applications** of Language Aptitude Testing
Thomas Parry	213	**Research** in Language Aptitude Testing
Charles Stansfield	214	Language Aptitude Testing--**Instrument Design**

10:00 - 10:15 **Coffee Break**
Room 101

10:15 - 12:00 **Working Group Meetings** (continued)

NOTES

ABSTRACTS

(in alphabetical order by first presenter)

The Personality and Attitudinal Dimensions of Language Aptitude

Michael D. Bush
United States Air Force Academy

For some years educators and linguists alike have been engaged in an attempt to understand and thus explain the process of acquiring a second language. There exists on one hand the reality that every "normal" person is successful at learning his or her native language with little apparent difficulty. Yet on the other hand, there is no doubt in research on second language acquisition that abilities to learn a new language differ widely from person to person. This paper presents findings from a study that looked at about one thousand pieces of data on approximately 1,200 students at the U. S. Air Force Academy. The resulting scales and variables were formulated into a regression equation that considered various dimensions of personality, attitudes, and interests and looked at how well these help predict success in second-language acquisition. A model was formulated around the notion that success in the language learning endeavor is determined by aptitude and motivation with the first factor being significantly influenced by "intelligence" and personality variables. Attitudes and interests related most closely with the motivation factor.

Cognitive Abilities in Foreign Language Aptitude: Then and Now

John B. Carroll
University of North Carolina

Although some skepticism is expressed regarding the possibilities of greatly improving currently available tests and procedures for predicting and diagnosing rates and degrees of success in foreign language learning, suggestions are offered on possible approaches: (1) revision of currently available tests to remedy minor defects, and construction and standardization of alternate forms; (2) extending currently available tests in the several domains of ability already known to have predictive value by adding tests to refine discriminations among those abilities, including further tests of auditory abilities; and (3) further study of the cognitive operations involved in foreign language learning, with attempts to develop tests and other procedures (e.g., work sample tests) that would better capture the essences of these cognitive operations.

The Role of Personality Type in Adult Language Learning: An Ongoing Investigation

Madeline E. Ehrman
Foreign Service Institute

This paper describes an ongoing project to examine the utility of Carl Jung's typology of conscious functioning in an intensive language training setting. A psychological instrument, the Myers-Briggs Type Indicator (MBTI), is built on the psychological type model, and through this instrument, I am investigating the interaction of student learning styles, preferred learning strategies, and specific external variables.

This paper discusses some questions about the meaning of language learning aptitude, describes the MBTI model and the research project, presents some of the findings that have emerged so far, and addresses the potential relevance of personality type to the concept and measurement of language aptitude.

Because quantitative findings are being published elsewhere, the present paper only summarizes them and focuses primarily on preliminary qualitative results. These are sketched in the light of interaction of methodology and type, insights into the nature and behavior of FSI students, an analysis of teacher and training supervisor interaction, some cross cultural applications, and personal and professional impact on the author.

Attitudes, Motivation and Personality as Predictors of Success in Foreign Language Learning

Robert C. Gardner
University of Western Ontario

The purpose of this paper is to review literature concerned with the relation of two classes of variables, attitudes and motivation, on the one hand, and personality characteristics, on the other, to achievement in a second language. Based on this review, it is concluded that the evidence is not strong for many relationships between personality traits and second language acquisition, whereas it is reasonably clear that attitudinal/motivational characteristics are involved. In considering the poor results of possible personality correlates, it is speculated that this could be due to the fact that researchers do not construct their measurement instruments of personality correlates to include the language learning context, and the trait of anxiety is used as a relevant example. That is, whereas anxiety is not a consistent predictor of proficiency in a second language, language classroom anxiety and language use anxiety are. It is proposed that the reason why attitudinal/motivational variables are better predictors of proficiency is because by and large researchers have tended to focus on attitudes and motivation that are directly relevant to the language learning context.

Research concerned with attitudes and motivation is then summarized, and it is demonstrated that attitudes and motivation form one class of variable that is relatively independent of language aptitude. Both are shown to be relatively consistent correlates of second language proficiency and that, combined, they offer good prediction of achievement. Related results demonstrate that, although both language aptitude and attitudinal/motivational indices demonstrate such convergent validity, only the attitudinal/motivational indices have discriminant validity.

In discussing this research, a distinction is made between common and idiosyncratic "causes" of second language achievement, and it is emphasized that, since research can only deal with the common causes, prediction will always be somewhat restricted. Attention is also directed toward a number of measurement and analytic problems that must be considered primarily when dealing with the relation of personality and attitudinal/motivational characteristics to second language achievement. These include such things as confounding levels of proficiency and/or course-related characteristics by merging classes, developing measures of variables that confound the attribute in question with second language achievement, etc. The relevance of this to the prediction of success in second language learning by adults is considered.

The Relationship between Cognitive Development and Foreign Language Proficiency

E. Franklin Jacobus, Jr.
Davidson College

This paper hypothesizes a link between cognitive development and aptitude for attaining levels of communicative proficiency in a foreign language. The hypothesis is based on empirical data.

In William G. Perry's theory, adults organize their view of the nature and acquisition of knowledge or truth in hierarchical, sequential stages called Dualism, Multiplicity, Relativism, and Dialectic. In broad terms, individuals in Dualism view truth as black or white and authorities as its source. Individuals in Multiplicity view truth as black and white but difficult to discover because there exist multiple truths from different authorities; personal whim is a means of choosing truth. Individuals in Relativism view truth as a conclusion reached from within a particular perspective and acknowledge that different perspectives and truths are possible. Individuals in Dialectic are able to commit themselves to one truth among perspectives but view it as open to modification from new thought and data.

My research suggests that there is a correlation (r=.60) between Perry level and the attainment of levels of language proficiency as measured by the ACTFL Oral Interview. I draw two inferences. First, to the extent that learning a language has hierarchical communicative goals, Perry intellectual level may put a limiting factor on the ultimate level of communicative proficiency. Second, Perry intellectual level may affect the speed and ease of language learning since the stages may shape the learning strategies chosen and the affective attitude felt in foreign language acquisition.

Brain Hemisphericity, Language Aptitude Testing, and Prediction of Success in Foreign Language Learning

Betty Lou Leaver
Foreign Service Institute

This presentation analyzes data from a 4-year study on the interrelationship of patterns of brain hemisphere dominance, MLAT scores (and in some cases, DLAB scores), and the rate of success in language acquisition for students of Russian studying in a ten-month intensive program designed to deliver students to the S-3/R-3 proficiency levels. Results of the study indicate that, at least for English-speaking students of Russian, the MLAT is an adequate criterion of ultimate success in language learning only for students displaying integrated brain dominance and is less than adequate for students displaying either right-brain or left-brain dominance (for different reasons in each case). In the case of right-hemisphere dominant students, the DLAB scores appear to be a better predictor of success, particularly in those cases in which the DLAB and MLAT scores differ significantly. Brief references will be made to differences in learning styles measured on the Kolb and Gregorc scales which may influence overall patterns of success in language learning. In all cases where only one measurement instrument was taken into consideration, the most clear-cut differences in rate of language acquisition and relative strength in subskill areas were best predicted by tests of hemisphericity.

Predictors of Success in an Intensive Language Learning Context: An Explanatory Model of Classroom Language Learning at the Defense Language Institute

John A. Lett, Jr.
Defense Language Institute

Frank E. O'Mara
Advanced Technology, Inc.

Since February 1986, the Defense Language Institute and the Army Research Institute have been collecting predictor and proficiency data from 1900 selected students in DLI's basic language courses in Korean, Russian, German, and Spanish. The results of preliminary analyses of the extensive data set will be presented orally and via overhead transparencies in this session. Criterion measures are scores on the Oral Proficiency Interview and the Defense Language Proficiency Tests; predictor measures include data on an array of individual characteristics, including (but not limited to) scores on an adaption of Robert Gardner's attitude/motivation battery, a learner strategies inventory, and a variety of cognitive style instruments. The results of a variety of multivariate analyses will be presented, and their implications will be discussed, including the tenability of the Gardner model and others when applied to language learning in the DLI context.

Styles, Strategies and Aptitude: Important Connections for Language Learners

Rebecca Oxford
Annenberg/CPB Project

The topic of language learning styles and strategies has recently come into vogue among researchers and practioners. However, few empirical studies or synthesis papers have attempted to link styles and strategies, much less to associate these two concepts with a third phenomenon, language learning aptitude. This paper summarizes research results currently available on these topics and explores their possible interconnections. Specific implications for language aptitude testing are presented.

Preliminary Investigation of the Relationship between VORD, MLAT, and Language Proficiency

Thomas S. Parry
Central Intelligence Agency

James Child
Department of Defense

The purpose of this paper is to report preliminary findings of a joint exploratory study conducted in 1987-88 between the Department of Defense and the Central Intelligence Agency to shed further light on the the psychometric properties of VORD, a new language aptitude test that uses an artificial language. Based on Turkic language structural typologies, VORD was developed in response to a need for an instrument that could better predict success in learning non-Indo-European languages. Such commonly used language aptitude tests as the *Army Language Aptitude Test* (ALAT) and the *Modern Language Aptitude Test* (MLAT) were developed and validated in the late 1950's to predict learner success particularly in Western European languages. The present study examines intercorrelations between VORD and MLAT subtests and the reliability of each measure in predicting learner end-of-training language proficiency outcomes.

The study was carried out in two phases. In phase one, the following research question was posed: Do significant correlations exist between MLAT and VORD subtests? From this question, two tangentially related questions were posed: 1) Is there a significant correlation between performances on MLAT/VORD and learners' *perceived* aptitude to learn foreign languages?, and 2) Is there a relationship between aptitude test performance and such learner variables as time-in-training, age, gender, level of motivation, and overall satisfaction with language training? For phase two of the investigation, the following questions were posed: 1) Do significant correlations exist between learner performance on MLAT/VORD and outcomes on end-of-training oral and reading proficiency tests?, and 2) Which subtests of the MLAT and VORD, either individually or in combination, are the strongest predictors of oral and reading proficiency test outcomes?

Thirty-six subjects (17 male and 19 female) enrolled in a government language training program volunteered to participate in the study. All were native speakers of English ranging in age from 21 to 56. Many had completed several years of service abroad and were learning their second and in some cases their third language. Subjects completed the VORD, MLAT, a questionnaire, and end-of-training oral and reading proficiency tests. Data were analyzed using the standard correlation and regression programs of the Statistical Analysis System (SAS).

For phase one of the study, data analysis revealed that significant moderate correlations exist between MLAT and VORD composite scores ($r=.695$, $p<.01$) and that correlations between MLAT and VORD subtests ranged from low to moderate ($r=.20$ to $.68$) with the moderate correlations being significant ($p<.01$). On the question of learners' perceived aptitude, subjects viewed themselves as *average* to slightly *above-average* language learners on a range from poor to superior. They also tended to score in the *average* range on the MLAT (per government norms). The correlation between these variables was found to be moderate and significant ($r=.727$, $p<.001$). Subjects scored in the 43rd percentile on the VORD (no norms), resulting in a mild but significant correlation with learner perceived aptitude ($r=.450$, $p<.05$). No significant correlations were found to exist between the variables of age, level of motivation, overall satisfaction with language training and MLAT/VORD subtest and composite scores. The time-in-training did not correlate with any of the VORD subtests, but was found to be significantly correlated with MLAT composite scores ($r=.591$, $p<.05$) and MLAT subtest III ($r=.621$, $p<.01$).

Data analysis for phase two revealed mild correlations between performance on the MLAT (composite scores) and speaking proficiency ($r=.476$, $p<.01$) and reading proficiency ($r=.446$, $p<.01$). Mild correlations were also detected between VORD composite scores and speaking proficiency ($r=.463$, $p<.01$) and reading proficiency ($r=.345$, $p<.05$). Combining VORD/MLAT *subtests* in a stepwise regression analysis, MLAT subtest II, *phonetic script,* was found to be the strongest predictor of reading proficiency while MLAT subtest III, *spelling clues,* was the strongest predictor of speaking proficiency. Of the four VORD subtests, the *sentences* subtest proved to be the strongest predictor of both language skills. MLAT *composite scores* were significantly better overall predictors of both speaking and reading language proficiency than VORD composite scores.

Although limited by small sample size, the present study provides evidence that MLAT is more effective than VORD as a predictor of language proficiency outcomes. There is evidence, however, that VORD may be a better predictor of learner outcomes in carrying out such discrete language tasks as grammatical analysis. This leads the researchers to conclude that language aptitude is more than a unidimensional construct.

Cognitive Models of Students' Language Structure: The View from Intelligent Computer Assisted Instruction

Joseph Psotka
Merryanna L. Swartz
Melissa Holland
Seymour Hanfling
U. S. Army Research Institute

Our work is aimed at developing job and training aids for military Intelligent Computer-Assisted Instruction (ICAI) foreign language training. Two technologies that show great promise for improving training are hypertext and natural language processing. Hypertext provides a text based system that goes beyond text to include graphics, video, and sound (hypermedia) as well as links, cross-references, and network or lattice structures. Natural language processing refers to the use of parsers, grammars, and dictionaries to provide computer-based language facilities. In order to individualize instruction to make it as effective as one-on-one tutoring, we must create effective student models.that capture students' knowledge structures and skills. Our goal, therefore, is to investigate these technologies to see how they may best be used to articulate student knowledge structures. In particular, we are interested in the web of links and nodes that relate students' knowledge in one language with their knowledge of similar semantic and syntactic structures in the language they are learning.

The specific focus of our project is the application of these technologies to the teaching of second languages in the schoolhouse. The principle components are: use of a hypertext, multilingual authoring environment for language instruction and the presentation of fundamental principles, vocabulary, and grammar; and use of an interactive parser and grammar for on-line translation, error-correction, and remediation of translation exercises and conversation. Both of these components are invested heavily by the technologies of Artificial Intelligence: Intelligent Computer Assisted Instruction, Machine Translation and Natural Language Processing.

We are investigating ways to improve upon these technologies to increase the effectiveness of training for the acquisition, sustainment, and automatic assessment of foreign language skills. Particularly, we are implementing techniques for modelling the cognitive skills underlying foreign language competence using computational linguistic models and semantic networks built in hypertext systems. These techniques may prove useful for assessing basic competencies.

APPENDIX B

List of Symposium Participants

List of Participants in the
ILR Symposium on Language Aptitude Testing
(in alphabetical order by last name)
(telephone numbers included when available)
September 30, 1988

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APPENDIX C

Papers Presented at the Symposium in Alphabetical Order by First Author

The contents of Appendix C were not included in the copy received by ERIC.

APPENDIX D

Final Summaries of the Working Groups' Discussion in Alphabetical Order by Facilitator

SUMMARY OF APPLICATIONS GROUP DISCUSSION

AT THE INTERAGENCY LANGUAGE ROUNDTABLE INVITATIONAL SYMPOSIUM

ON LANGUAGE APTITUDE TESTING

Comments Summarized by Rebecca Oxford, Annenberg/CPB

Group Members: Marijke Walker, Olga Navarrete,
Bryce Christensen, FBI
Betty Leaver, Madeline Ehrman, FSI
Thérèse Castonguay, PSC
Rebecca Oxford, Annenberg/CPB

Assistants: Stephanie Kasuboski, Laurel Winston, CAL

PURPOSES FOR ASSESSING PREDICTORS OF LANGUAGE LEARNING SUCCESS

This group identified the following purposes for assessing predictors of language learning success:

1. Selection (in or out) - current programs
2. Qualification for future programs
3. Placement/streaming into different kinds of programs
4. Tailoring/individualization
5. Diagnosis/counseling

TERMINOLOGY

The group unanimously decided it would be helpful to abandon the term "aptitude testing," because of its restrictively cognitive connotations. Preferred terms included:

1. Assessing the predictors of language learning success
2. Assessing the enhancers of language learning success

These were viewed as more comprehensive terms which could include affective, social, style, and strategy variables as well as cognitive factors.

DEFINITION OF LANGUAGE LEARNING SUCCESS

Language learning success is likely to be viewed differently by different agencies. Some agencies would consider the learner successful if proficiency is shown in all four skills; other agencies are concerned only with the receptive skills.

In addition, language learning success will also be differently defined for various professions. The constant example is the

translation profession, which requires very different skills from many other language professions.

The definition of language learning success must be carefully considered before it is possible to choose relevant predictors of language learning success.

THE NEED FOR A BATTERY OF PREDICTIVE INSTRUMENTS AND A PROFILE

The group felt that a single test score is not useful. We need a multidimensional profile arising from a battery of predictive instruments. Candidate variables include:

1. Cognitive/linguistic (standard aptitude-type tests)
2. Attitude/motivation related to language learning, target culture, etc.
3. Personality variables as relevant
4. Learning styles (e.g., brain hemisphericity, global/analytic, MBTI-type)
5. Learning strategies
6. Background, learning experiences, etc.

It was suggested that a personal interview be used to validate results of the more objectively developed profile. Most agencies are already doing intensive interviews, and their representatives felt that in most cases the interview data could be made available.

CONSTRUCTION OF THE BATTERY:

The following ideas are not in any particular order, nor do they represent all the steps in the construction of the battery. They do offer some useful suggestions, however.

1. Include a fakability scale (social desirability) as part of one of the instruments.
2. Use the best of the existing aptitude subtests to measure the cognitive predictors of language learning success.
3. Mix easy and hard items if possible on a speeded test to enable reflectives and impulsives to reveal themselves.
4. Use a scoring system that checks for speed and accuracy separately.
5. Include some power (unspeeded) testing.
6. Include some items that predict differentially for different language families (e.g., Romance, Slavic, etc.)
7. Be sure to include dimensions beyond the cognitive (e.g., the dimensions listed above under THE NEED FOR A BATTERY OF PREDICTIVE INSTRUMENTS AND A PROFILE).

POLITICAL ISSUES

1. Don't use the term "personality" in some agencies.
2. Focus on the need for a sufficiently long testing period.

Justify through cost-effectiveness and cost-benefit figures. (Ex.: it costs $75K for 1 student for 1 year at DLI, according to one estimate; need to predict success accurately, or else this investment is lost through the individual's failure and dropping out.)

3. The better our prediction of language learning success factors, the more we will realize that one of these factors is outside the student's control: the instructional methods used. How much can we influence this factor?

STREAMLINING THE LEARNING PROCESS VIA STRATEGIES

We have all heard Dr. Carroll's statement that anyone can learn with sufficient time. But as Dr. Carroll also states, and as most of us agree, we can streamline the learning process (i.e., the amount of time and effort it takes to learn) by training students to use appropriate strategies.

These strategies make learning more efficient and effective. Example: Metacognitive strategies for planning, self-evaluating, etc.; cognitive strategies for reasoning, analyzing, etc.

Strategies can also help learners overcome a number of affective and social barriers. Example: Some agencies train their employees to consider certain countries as enemies, but then they expect the employees to want to learn the language of those countries; this sets up many affective and social barriers which have to be broken down. Strategies (such as consciously focusing on "good" aspects of the culture, centering on the language as a means of communication, pairing with a sympathetic native speaker, using positive self-talk, etc.) can overcome these barriers.

ADAPTATIONS NEEDED

Three kinds of adaptations seem to be needed:

1. Train students to adapt themselves to an extent - through student training in learning strategies
2. Train teachers to adapt themselves and the program to an extent - through teacher training in instructional strategies
3. Train students to adapt the program materials to an extent - through student training in materials adaptation and especially through training in metacognitive strategies (so students will know how to assess their own learning needs)

The point of these adaptations is CONVERGENCE of student, teacher, language program, and agency needs.

Note that assessment and diagnosis are necessary parts of any adaptation. You have to know where you are in order to know where you're going!

NEEDED RESEARCH

The following non-prioritized areas need research:

1. Plateauing - causes of (affective, cognitive, etc.), fixes for
2. Different styles and strategies most useful for lower levels and higher levels of language learning
3. Differential prediction by language family, profession, etc.
4. Reliability and validity issues
5. Strategy training - what kind of training is optimal for whom? What are the effects?

Final Report of the Research Working Group of the Interagency Language Round Table Invitational Symposium on Language Aptitude Assessment

September 14-16, 1988

Submitted by Thomas S. Parry, Committee Chair

The agenda for the Research Working Group included four major components. They were:

1. Review and discuss crucial research questions and issues with an eye toward prioritization.
2. Develop a plan to conduct a government-wide needs analysis to determine what various agencies want to accomplish.
3. Discuss possible funding sources for research projects.
4. Develop a realistic timeline.

Research Questions and Issues

The Research Working Group agreed that future research should continue to address the "non-cognitive" areas such as brain hemisphericity, learning/teaching styles and strategies, attitude, and motivation. Little is really known about brain hemisphericity. It is an area of tremendous relevance in better understanding the language learning/acquisition process. Recent research efforts in this area have been fruitful and have provided an excellent foundation for continued work in the years ahead. Further research in the area of learning/teaching styles and strategies as well as attitudes and motivation must address refinements in instrument design, construct validity, clarification of operational definitions, and utilize research designs employing an aptitude-by-treatment-interaction (ATI) framework.

From a criterion standpoint, future research efforts should focus on the multidimensional nature of language proficiency and how to predict success in mastering specific language skills (i.e. speaking, reading, listening, and writing) at different ILR levels of proficiency in specific languages. Because proficiency sets forth the framework for most language instruction and testing within the U.S. government, refinement of the guidelines for the receptive and writing skills at each ILR level would appear to be a priority.

Specifically, the questions that need to be addressed by each USG agency are: 1) What language or languages should we teach? 2) On which of the four skills should we focus our

instruction? 3) To what level(s) of proficiency shall we teach? and 4) What applications of language skill(s) will need to be taught (i.e. general, job-related, or job-specific)? Knowing the answers to these questions will aid USG research efforts to develop useful measures to predict success in these areas.

Finally, the issue of whether there is a "translation aptitude" was discussed. Discussion focused on two major questions: Is there such a thing as translation aptitude and if so, how would it be measured? Translation requires a highly specialized verbal ability to parse very complex structures in two or more languages. It seems that a measure of translation aptitude would need to assess an individual's sensitivity to do complex parsing similar to the "Translator Readiness Test" used at the Department of Defense.

Government-Wide Plan to Conduct Needs Analysis

The plan to conduct a government-wide needs analysis included five steps.

1. Discussion should begin within ILR Testing Committee concerning the desired outcomes of language training efforts. (In other words, what are the desired criterion outcomes?)

2. Discussion should branch out from the ILR Testing Committee to include management personnel of the respective agencies in an effort to better understand their views on language training in general and language training outcomes in particular.

3. Discussion should then be extended to include clientele from the various agencies who will be the recipients of language training. We need to know their goals, how they plan to use a foreign language in their various assignments and to what degree of proficiency.

4. Inventory existing databases in various agencies to determine what can be analyzed and how it should be analyzed based on agency needs and prioritized research questions.

5. Develop a marketing strategy, based on prioritized research questions, that aligns with various agencies' short- and long-term goals with an eye to selling the idea of "ongoing research" to senior management.

Funding Sources for Research

The group concensus was that it was too early to approach any agency or private foundation on the subject of funding without having a specific research plan or projects to propose. Possible sources to approach for future funding might include the

Department of Education (DOE), The National Science Foundation (NSF), and the National Endowment for the Humanities (NEH).

Timeline

To accomplish all that has been set forth in this and other committee deliberations and reports may be possible in one calendar year. Considering workloads and priorities, however, eighteen to twenty-four months may be more realistic. The danger of carrying this preliminary groundwork too far into the future is that people and agencies will become disinterested and bored. For this reason, the development of the long-term research plan should reside with the ILR Testing Committee (as a focal point) and remain a high priority on the committee's agenda.

Final Report of the Working Group on Instrumentation

Charles W. Stansfield
Facilitator

Members of this working group were: Nazih Daher (FSI), Stephen Soudakoff (DLI/NCS), Robert C. Gardner (University of Western Ontario), Pardee Lowe, Jr. (CIA), John L.D. Clark (DLI), Dorry Mann Kenyon (CAL) and Charles W. Stansfield (CAL), who served as facilitator.

This report is divided into three parts. The first section describes the working group's outline of a proposed project for future work. The second section proposes specific steps that will need to be implemented in order to begin the project. The last section lists outstanding issues and research questions brought up in the working group's discussion but not directly incorporated into the proposed agenda.

PROJECT OUTLINE

An Interagency Project. The working group envisages an interagency project that would involve a number of governmental agencies in a number of different ways, including the contribution of personnel and funding. The medium for working together would be the ILR, which would provide the necessary framework.

Focus on Foreign Language Learning Prognosis. The scope of the project would be broader than language aptitude testing per se. It is thought that foreign language learning prognosis would

better describe the goals of the project. That is, the goal of the project would be to improve the prediction of foreign language learning success through a battery of measures that would not only include measures of cognitive variables, but also measures of attitude/motivation, personality, and perhaps learning strategies (as and if appropriate).

Computer-Based Testing. At the heart of the project would be computer-based testing. At the very least the project would incorporate computer-administered testing. If and when possible, computer adaptive testing techniques could be used. The technology of EIDS (Electronic Information Delivery System) would be used, making possible the use of audio and video components in the test administration. The system and the database that would drive the computerized testing program would be flexible enough to be adapted to the specific needs of the different agencies. The system would also be able to be adapted on an individual basis, or by any combination of agency needs and individual strengths in terms of specific jobs in specific agencies.

Three Variable Domains. Three interacting domains of variables would need to be considered. The first one would be student variables, including student background variables such as previous language learning exposure, length of any previous language training and proficiency level achieved. It was pointed out in the course of the working group's discussion that previous exposure to language learning is not an automatic positive predictor of foreign language learning success. For instance,

the fact that an individual after lengthy training reached only a low proficiency level in an "easy" language may be prove to be a negative predictor. The second domain of variables to be considered would be instructional variables, not only in terms of the goals of the instruction, but also in terms of the type of instruction under consideration. For example, is placement in an analytically-oriented or proficiency-based program being considered? There are differences in methods and teachers among the various agencies that would need to be considered. Finally, the outcome criteria variables play a crucial role. These would include, as necessary, the level of proficiency to be reached within a certain time frame, the skills to be mastered, and the specific language to be learned.

Task-Based Exercises. The working group felt that assessment would best be based on some type of work sample because, among other reasons, task-based exercises have a greater degree of face validity. The tasks would vary from language to language, from skill to skill, and with the needs of each agency. Examples of these variations include the need to assess the ability of a student to deal with a tonal language (e.g. Chinese), in which case an auditory task may be required, and the need to assess the ability of a student to deal with a complicated writing system (e.g. Japanese), in which case a visual task may be required to assess sensitivity to writing form.

Test General and Specific Aptitudes. The computer based testing approach would allow the flexibility for the assessment to begin with a general aptitude measure. Then, once there was a fix on general aptitude, the system would measure specific skill-by-language aptitudes. The approach would allow for a battery of various subtests and a large item bank, to which various agencies could contribute. The system would be driven by the aptitudes needed by a specific agency and for specific positions within that agency, when desired. This would lead to the most optimal placement given the agency's needs. The computer-based approach, in which the examinee's responses would be electronically stored by the computer, would enable a huge database to be built up. This database could be accessed for research purposes both by researchers inside the government and by those in the academic community when possible.

STEPS TOWARD PROJECT IMPLEMENTATION

The working group proposed the following specific steps towards implementation of this project.

1. Assuming interagency cooperation, we would begin with a survey of the needs within each agency. This survey would identify needs in term of the languages taught, the use of language learning prognosis data (i.e. what application each agency makes of language learning prognosis information, whether for selection, placement, or diagnosis) and the foreign language skills needed in each agency. It was

envisioned that the data collected by the operational computer-based testing project could be used for a variety of purposes for which scores on current aptitude measures are not generally used. One of these uses could be in providing instructors with feedback enabling them to enhance instruction, especially in reference to the teaching and use of individual strategies for both language learning during training and maintaining language skills after training.

2. We would collect available measurement instruments, not only of aptitude, but also of attitude, motivation, learning styles, etc.

3. Before writing task-based items, we would develop a taxonomy of specific language-by-skill tasks on an interagency basis. This would be a taxonomy that identifies abilities that vary by skill crossed with language, such as the auditory ability to deal with tones or the visual ability to deal with a non-Roman alphabet. This taxonomy would address the question of what factors make one language harder than another for American English speakers to learn, thus enabling us to specifically develop measurement instruments to discriminate among those abilities which best predict aptitude to handle those factors.

4. The next step would be to compile, adapt and write items for the task-based exercises. This, too, would be on an interagency, cooperative basis.

5. Concurrently with the above, we would need to examine the technology that would be required to implement this system. We would need to propose a plan of the hardware and software requirements of the project.

QUESTIONS FOR FURTHER RESEARCH

Paralleling the above proposed interagency project, the working group discussed the following additional issues and research questions.

1. Is there any room for a "cando" self-assessment (self-rating) in a battery of predictors of foreign language learning success?

2. What, if any, is the relationship of paper and pencil tests to predicting oral proficiency?

3. How can aptitude for translation and interpretation be tested?

4. What is the difference in testing for language aptitude for people who have had no foreign language learning experience

versus those who have? In other words, what is the effect of prior language learning on the validity and predictive results of a language aptitude measure? How might these differences affect validity when using a single instrument?

5. Is there a difference in predicting success in initial learning of a language versus testing for ultimate success at high levels of proficiency?

6. How do available language aptitude tests perform in predicting for success in learning different languages according to a taxonomy of what is required to learn those languages by skills?

7. What is the best type of score to be reported to managers--a single score or a composite?

8. What is the most effective way to mask attitudinal/motivational questions so that examinees cannot "fake" their answers to them?

9. How can we improve differential prediction of success for different languages or language families?

10. **How can we best predict long-range language learning after completion of a training program and an individual's success in maintaining foreign language skills?**